

Observations on nests and nesting activities:

- i) About twelve mounds of mud were present amidst the shallow water.
- ii) Of these, about nine were clustered together, whereas others were located away from the cluster.
- iii) The spot where the cluster of nests was located, was not densely covered with grasses, hedges or other macrophytic vegetation.
- iv) Some of the nests were conical in shape while others were cylindrical. The shape of a few mounds was irregular. Depression at the top of the nests (concave and cylindrical) could not be seen because we did not approach the nests closely to avoid disturbance.
- v) On nests, individuals were found either sitting, standing, displaying or busy shaping the nests.

Nest construction: Standing on top of the nest, the flamingo moved its beak on the top of the nest, describing an arc, it also moved its beak along the flank of the nest in linear up and down manner. To shape the nest with its legs, it would stand on top of the nest, the neck would be bent

down so that the beak was brought in contact with the top of the nest. Then, with the beak as a centre (pivot) the bird would move the beak along the rim at the top. During this circular movement it was seen trampling or pressing down the top of the nest by raising its feet one after another.

About two to eleven individuals were present at Shahwadi on different occasions after the emigration of their colony (Table 1). One can rightly doubt that the individuals staying behind at Shahwadi, even after the departure of the colony, would breed at the site. However, from 13th August to 25th September, neither nest shaping nor breeding display were observed among these birds. They were remarkably silent and always busy feeding in the rapidly drying waters. They were always seen away from the nests. Moreover, the birds were absent on subsequent visits on 27th September and 10th November, 1992.

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9. CONTAMINATION IN EGG SHELLS OF HIMALAYAN GREYHEADED FISHING EAGLE *ICHTHYOPHAGA NANA PLUMBEA* IN CORBETT NATIONAL PARK, INDIA

A study of the breeding biology of resident raptors of Corbett National Park, Uttar Pradesh, India was undertaken during the years 1990 to 1993. The Park is situated in the lower Himalayan foothills known as the Sivaliks within the Bhabar tract, between 29° 31' and 29° 35' N, lat.,

70° 41' E. long. According to Ali and Ripley (1978), the Himalayan greyheaded fishing eagle *Ichthyophaga nana plumbea* extends from the lower foothills upto 2400 m, optimally between 1000 to 1500 m in western Himalayas and under 1000 m in the eastern Himalayas. The middle

reaches of the Ramganga river flow through most of the Park. The topography is undulating, varying in altitude from 200 to 1000 m, which is the preferred range and habitat of the species. The Park is one of the strongholds of the species in India. In Kumaon the species was never seen above 1000 m and prefers rivers with forested banks. Sibley and Monroe (1990) treat it as a separate species *Ichthyophaga humilis*; now widely accepted. Kumaon comprises the four hill districts of Almora, Nainital, Udham Singh Nagar and Pithoragarh in northern Uttar Pradesh 29° N, 80.1° E and 30.1° N, 80.5° E.

From 1991 - 96 the greyheaded fishing eagle bred unsuccessfully. Eggs from seven nests monitored during this period did not hatch, while three nests hatched, young ones were either found dead in the nest, or disappeared within a week of hatching. Eggshell fragments which were collected from one nest in April 1991, were deformed. Thinner than normal eggshells, were analysed in the U.S. by Dr. Robert W. Risebrough of The Bodega Bay Institute, California. Since no yolk remnants or membrane fragments remained on the shell, a quantitative analysis that could be compared with data in the literature was not possible. Nevertheless, a number of organochlorine compounds were detected; their ratios provide clues to the local contamination pattern in the area inhabited by the eagles.

The parent DDT compound, that is the insecticidal ingredient, p,p'-DDT, constituted 36% of the DDT compounds measured; the amount of o,p'-DDT, the minor ingredient in the original DDT mixture, was 10% that of p,p'-DDT. The relatively high amounts of these two compounds indicate recent DDT applications in local or nearby areas; the evident thinning of the shell is most likely an effect of DDE, usually the principal metabolite of DDT in the environment and the compound considered primarily responsible for shell thinning. PCB congeners and dieldrin were detected, but at relatively low levels of about 6% and 2%, respectively, of the total DDTs. The dieldrin levels, however, are

significant. Dieldrin, which is highly toxic to birds of prey, has been implicated in the population decline of raptors in Europe and North America (Cooke *et al.* 1982, Newton 1979, Risebrough 1989, 1994). Shell Chemicals, the manufacturers, have stopped its manufacture and sale anywhere in the world. Locally, it is most likely derived from aldrin, which until recently at least, has been widely used in northern India. These contaminants could have been passed on only through the prey base, which for this species is solely fish. The presence of these contaminants in the local riverine food web is, therefore, a plausible cause of at least some of its unsuccessful breeding attempts, in Corbett National Park.

On the higher reaches of the Ramganga, the densely populated hillsides are covered with intensely terraced cultivation. Information obtained from agricultural supply shops and farmers indicate that pesticides are used on a large scale, in order to control agricultural pests. The contaminants probably run off into the water system during the heavy monsoon which the region experiences.

The burgeoning human population especially along hillstreams and rivers is having a direct impact on the fishing eagle; through over-fishing (using several illegal methods such as extensive use of pesticides to poison fish and dynamiting upstream beyond the Park's northern boundary), damming of rivers and degradation, or complete destruction of riverine forest, directly affecting the species through loss of nesting habitat. Monitoring the reproductive success of the local population of the eagle in Corbett is continuing and the results of subsequent analysis for organochlorines is being carried out.

The species is probably seriously threatened at Corbett and likely to be similarly affected throughout its range in India. Besides the negative impact from chemical contamination, this mainly sedentary species is fully dependent on the Himalayan riverine system and further at risk due to loss of habitat and disturbance in the upper limits of its range.

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10. A RECORD OF PALLAS' FISHING EAGLE *HALIAEETUS LEUCORYPHUS* FROM SPITI VALLEY (H.P.)

In June, 1995 a live subadult specimen of the Pallas' fishing eagle was recovered from "Shego" at an altitude of about 3800 m in the Spiti valley, of Lahaul Spiti dist., Himachal Pradesh, India. This is the first record of the species in Spiti Valley and probably the first record in the Indian Trans-Himalayan region.

The individual was recovered by local villagers from "Shego forest" which is about 7 km from the Park headquarters, Kaza. Shego forest is a high altitude cold desert area situated on the banks of the river Spiti. Poplar, willow trees and *Hippophae* bushes are the main vegetation of the forest. The local villagers informed that the bird was chased by two crows on the bank of the river, and was running with spread wings. When the villagers captured it, it was not in a position to fly, because of a leg injury. Its right leg, specially the talon, was infected and the infection had spread all over the leg. One of

the villagers took it home and applied some medicine on the bird's leg. After 35-40 days of capture he consulted the local Veterinarian, who gave a Gentamycin injection and recommended regular draining of the pus. Unfortunately, the eagle died 6-7 hrs after the Gentamycin dose. Some researchers from WII Dehradun on tour to this area confirmed it's identity. Its morphometric measurements are summarized as under:

Length of stretched wings: 154 cm
 Length of body (Beak to tail) 92 cm

The skin is preserved and kept in the office as record.

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